

Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled): [A tube of zirconium-base alloy for constituting all of the outside portion of cladding for a nuclear fuel rod or of a guide tube for a nuclear fuel assembly, made of a zirconium-based alloy containing, by weight, 0.8% to 1.8% niobium, 0.2% to 0.6% tin, and 0.2% to 0.4% iron, plus inevitable impurities, and having a carbon content controlled to lie in the range 30ppm to 180 ppm, a silicon content in the range 10 ppm to 120 ppm, and an oxygen content in the range 600 ppm to 1800ppm.]

Claim 2 (canceled): [A tube according to claim 1, wherein the alloy is in recrystallized state.]

Claim 3 (canceled): [A tube according to claim 1, wherein the alloy is in relaxed state.]

Claim 4 (canceled): [A tube according to claim 1, wherein the alloy has set contents: -0.9% to 1.1% niobium, 0.25% to 0.35% tin, and 0.2% to 0.3% iron.]

Claim 5 (currently amended): A method of manufacturing a tube[according to claim 1] of zirconium-base alloy for constituting all or the outside portion of cladding for a nuclear fuel rod or of a guide tube for a nuclear fuel assembly, made of a zirconium-base alloy containing, by weight, 0.8% to 1.8% niobium, 0.2% to 0.6% tin, and 0.02% to 0.4% iron, plus inevitable impurities, and having a carbon content controlled to lie in the range 30 ppm to 180ppm, a silicon content in the range 10ppm to 120ppm, and an oxygen content in the range 600ppm to 1800, including the following steps of:

making a bar of an alloy containing 0.8% to 1.8% niobium, 0.2% to 0.6% tin, and 0.02% to 0.4% iron;

after heating in the bar to a temperature in the range 1000°C to 1200°C, quenching the bar in water;

drawing the bar into a blank after heating to a temperature in the range 600°C to 800°C;
annealing the drawn blank at a temperature in the range 590°C to 650°C; and
cold rolling the annealed blank in at least four passes into a tube, with intermediate heat treatments at temperatures in the range 560°C to 620°C.

Claim 6 (previously presented): A method according to claim 5, wherein the rolling passes are performed on tubes having increasing recrystallization ratios.

Claim 7 (previously presented): A method according to claim 5 further including a recrystallizing final heat treatment step at a temperature in the range 560°C to 620°C.

Claim 8 (previously presented): A method according to claim 5 further including a strain relieving final heat treatment step at a temperature in the range from about 470°C to 5000°C.

Claim 9 (new): A tube for constituting all or the outside portion of cladding for a nuclear fuel rod or of a guide tube for a nuclear fuel assembly, made of zirconium-base alloy consisting essentially of:

0.8 % wt. to 1.8% wt. niobium,

0.2% wt. to 0.6% wt. tin,

0.02 % wt. to 0.4% wt. iron, plus inevitable impurities,

a carbon content controlled to lie in the range 30 ppm to 180-ppm,

a silicon content in the range 10 ppm to 120 ppm, and

an oxygen content in the range 600 ppm to 1800 ppm, with the balance zirconium.

Claim 10 (new): A tube according to claim 9, wherein the alloy is in recrystallized state.

Claim 11 (new): A tube according to claim 9, wherein the alloy is in relaxed state.

Claim 12 (new): A tube according to claim 9, wherein the alloy has set contents: 0.9 wt. % to 1.1 wt. % niobium, 0.25 wt. % to 0.35 wt. % tin, and 0.2 wt. % to 0.3 wt.% iron.